

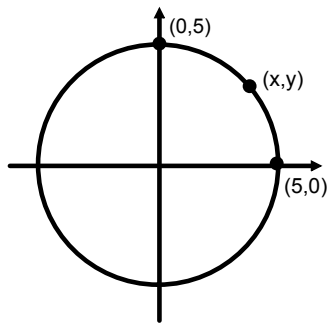
#### L4(2.3)-The Equation of a Circle in Standard Position (0,0)

Circle: The set of all points that are equal distance from a reference point (the centre).

Standard Position: The centre of the circle is at the origin (0, 0).

We can use this definition, along with the distance formula, to determine the equation of a circle.

## Circle with centre (0,0)



Let  $P(x,y)$  be any point on the circle.

Then,  $OP = r$

The formula for the length,  $d$  of a line segment is:

Substitute  $r$  for  $d$ ,  $(x,y)$  for  $(x_2,y_2)$ , and  $(0,0)$  for  $(x_1, y_1)$

So the equation of a circle having centre  $(0,0)$  and radius  $r$  is

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In general, a circle has a radius,  $r$ , and the equation of a circle in standard position is:

$$x^2 + y^2 = r^2$$

Ex.1. Write the equation of a circle in standard position with:

a)  $r = 2$

b)  $3 \frac{1}{5}$

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Ex.2 What is the radius of each circle?

(a)  $x^2 + y^2 = 49$

(b)  $x^2 + y^2 = 37$

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Ex 3. Write the equation of the circle with centre (0,0) and radius 4.

Assigned Work: p.91-92 # 1, 2, 3a, 4, 5, 6, 8

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